

REMARKS

This Amendment is filed in response to the Official Action dated December 22, 2004. In this Amendment, claims 1, 11, and 17-21 are amended and claims 2-10 and 12-16 are unchanged. Following entry of this amendment, claims 1-21 shall be pending.

In the Office Action, an information disclosure statement is requested, various drawings are objected to, and various objections are raised regarding the specification. Additionally, claims 1-18 and 21 are rejected because of informalities, claims 1-21 are rejected due to anticipation based on prior art, and claims 4 and 6 are rejected due to obviousness based on prior art. The applicants hereby request reconsideration of these claims in view of the reasons set forth below.

I. INFORMATION DISCLOSURE STATEMENT

The Examiner indicated that the references cited in the application should be cited in an information disclosure statement. In response, the Applicant has listed these references on form 1449/PTO.

II. DRAWINGS

The Examiner objected to Figure 2 because the repeater node 177 is shown as an actuator node 177. A replacement Figure 2 is provided which amends the typographical error of "Actuator 177" to "Repeater 177". It is believed that no new matter is added with this amendment.

The Examiner objected to Figure 1 as including unreferenced characters. A replacement Figure 1 is provided which has been amended to remove all unreferenced element numbers. It is believed that no new matter is added with this amendment.

The Examiner objected to Figure 2 as including an unreferenced character, namely element 192. Paragraph 0045 has been amended to include element 192 in reference to a local area network, labeled as such in Figure 2. It is believed that no new matter is added with this amendment.

The Examiner objected to Figure 3 as including an unreferenced character, namely element 351. Paragraph 0063 has been amended to include this element number. Since Figure 3 already identified this element as a building, it is believed that no new matter is added with this amendment.

The Examiner objected to Figure 4 as including an unreferenced element, namely element 416. Paragraph 0064 has been amended to include reference to this element number. Since Figure 4 already identified this element as the "Finished" step in the flow chart, it is believed that no new matter is added with this amendment.

The Examiner objected to Figure 12 as including unreferenced elements, namely elements 1200-1205, 1207-1211, 1213, 1221, and 1222. Paragraph 0087 has been amended to include these element numbers. Since the unreferenced element numbers represent elements that are nearly identical to those previously described in paragraph 0087, it is believed that no new matter is added with this amendment.

The Examiner objected to Figure 7 as not including a character mentioned in the description, namely element number 751. Figure 7 has been amended so that the "Probe Body" includes an element number of 751, while the "Sensor Node" is generally referred to as element number 750. No changes have been made to the text of the specification and therefore it is believed that the correction to this typographical error adds no new matter.

The Examiner objected to the drawings because they fail to show system 120 as described in the specification. Paragraph 0054 has been amended to include element number 130 as the element number for the system. Since the system is referred to by element number 130 elsewhere in this application, it is believed that no new matter is added with this amendment.

The Examiner objected to the drawings because they fail to show system "a common node 1304" as described in paragraph 0092. Paragraph 0092 has been amended to include element number 1305 in reference to the common node, as shown in Figure 13. Since the correct element number is shown in Figure 13, it is believed that no new matter is added with this amendment.

The Examiner objected to the drawings under 37 CFR 1.83(a) because claims 3 and 13 claim a voltage measurement circuit coupled to the common line, yet is not explicitly shown in the Figures. However, this arrangement is illustrated in Figure 13 which shows a sensing circuit 1308 coupled to the common line 1304 and in paragraph 0094 which states that "...sensing circuit 1308 is coupled to the common line and the system monitors the start and stop times of each zone by measuring the voltage and/or current on the "common line" of the valves". Thus, in an effort solely to expedite prosecution, a simplified version of the embodiment of Figure 13 has been added as Figure 15B, showing the sensing circuit 1308 as a voltage measurement circuit 1308B. Further, paragraph 0101 has been amended to reference newly added Figure 15B. Since the subject matter of Figure 15B was previously discussed in the specification and shown in Figure 13, it is believed that no new subject matter is added with this amendment.

The Examiner objected to the drawings under 37 CFR 1.83(a) because claims 5 and 14 claim a voltage measurement circuit coupled to the control line, yet is not explicitly shown in the Figures. However, this arrangement is described in paragraph 0095 which states, "In another embodiment, the sensing circuit can be coupled to each of the control line of the zones. The system thus monitors the start and stop times of each zone by measuring the voltage and/or current on each individual control line for the valves. Transitions of voltage and/or current on the "common line" or control lines are used to determine the start/stop of each irrigation zone." Thus, in an effort solely to expedite prosecution, a simplified version of the embodiment of Figure 13 has been added as Figure 15A, showing the sensing circuit 1308 as a voltage measurement circuit 1308A. Further, paragraph 0101 has been amended to reference newly added Figure 15A. Since the subject matter of Figure 15A was previously discussed in the specification and shown in Figure 13, it is believed that no new subject matter is added with this amendment.

The Examiner objected to the drawings under 37 CFR 1.83(a) because claims 7 and 15 claim a current measurement circuit coupled to the common line, yet is not

explicitly shown in the Figures. However, this arrangement is illustrated in Figure 13 which shows a sensing circuit 1308 coupled to the control line 1304 and in paragraph 0094 which states that "...sensing circuit 1308 is coupled to the common line and the system monitors the start and stop times of each zone by measuring the voltage and/or current on the "common line" of the valves". Thus, in an effort solely to expedite prosecution, a simplified version of the embodiment of Figure 13 has been added as Figure 16B, showing the sensing circuit 1308 as a voltage measurement circuit 1308F. Further, paragraph 0101 has been amended to reference newly added Figure 16B. Since the subject matter of Figure 16B was previously discussed in the specification and shown in Figure 13, it is believed that no new subject matter is added with this amendment.

The Examiner objected to the drawings under 37 CFR 1.83(a) because claims 9 and 16 claim a current measurement circuit coupled to the control line, yet is not explicitly shown in the Figures. However, this arrangement is described in paragraph 0095 which states, " In another embodiment, the sensing circuit can be coupled to each of the control line of the zones. The system thus monitors the start and stop times of each zone by measuring the voltage and/or current on each individual control line for the valves. Transitions of voltage and/or current on the "common line" or control lines are used to determine the start/stop of each irrigation zone." Thus, in an effort solely to expedite prosecution, a simplified version of the embodiment of Figure 13 has been added as Figure 16A, showing the sensing circuit 1308 as a current measurement circuit 1308E. Further, paragraph 0101 has been amended to reference newly added Figure 16A. Since the subject matter of Figure 16A was previously discussed in the specification and shown in Figure 13, it is believed that no new subject matter is added with this amendment.

The Examiner objected to the drawings under 37 CFR 1.83(a) because the transistor of claims 4 and 6, the operational amplifier of claims 4 and 6, the inductively coupled current detector of claims 8 and 10 and the in-line resistor of claim 8 and 10 are not explicitly shown in the Figures. However, prior to amendment, paragraph 0101

stated, "In one embodiment, detection of the voltage on the common line or the control lines can be achieved through the use of a transistor or operational amplifier that saturates when the potential difference on the two contacts of the open relay exceed a specified threshold. Detection of the current in the common line or the control lines can be achieved either by an inductively coupled current detector or by measuring the voltage differential across an in-line resistor." Thus, in an effort solely to expedite prosecution, a simplified version of the embodiment of Figure 13 has been added as Figure 15C showing sensing circuit 1308C as including a transistor, Figure 15D showing sensing circuit 1308D including an operational amplifier, Figure 16C showing sensing circuit 1308G as including an inline resistor, and Figure 16D showing sensing circuit 1308H as including an inductively coupled current detector. Further, paragraph 0101 has been amended to reference the newly added Figures. Since the subject matter of these Figures was previously discussed in the specification and shown in Figure 13, it is believed that no new subject matter is added with this amendment.

It should be noted that although the Applicant has provided the Examiner with newly added Figures 15A-16D, the Applicant believes these Figures to be unnecessary. Specifically, 37 CFR 1.83(a) states:

(a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims. *However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box).* [Emphasis added]

The Applicant believes that the features discussed above relating to claims 3-8, 10, and 13-15 are of a convention nature that do not require an illustration for a proper understanding of the invention and thus were already previously illustrated in the form of a symbol in the Figures. For example, an in-line resistor is a common electronic component well known in the art for decades. The specification clearly describes that this element could be used within the sensing circuit 1308, as represented in Figure 13.

In this respect, the other aforementioned claims of this paragraph are similarly common and described in the Figures and specification. Thus, the Applicant believes these objections to be in error. However, as stated in the previous paragraphs above, the Applicant has provided new Figures 15A-16D anyway, in an effort to expedite prosecution of this application.

III. SPECIFICATION

The Examiner objected to paragraph 0001 as lacking cross-referenced application numbers. Paragraph 0001 has been amended to include these application numbers. Additionally, paragraph 0001 has been amended to claim priority to U.S. Provisional Patent Application 60/421,963, filed October 28, 2002, entitled System for Environmental Monitoring and Control.

The Examiner objected to paragraph 0079 as including an incorrect element number for the soil, namely element number 755. Paragraph 0079 has been amended to include element number 754 for the soil.

The Examiner objected to the title of the present application as not being descriptive. The title has been amended to "Apparatus and Method for Supplemental Control of an Automatic Sprinkler System".

IV. CLAIM REJECTIONS UNDER 35 U.S.C. SECTION 112

The Examiner has rejected claim 18 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner indicates that claim 18 requires turning off the first irrigation zone entirely but claim 17 from which claim 18 depends, requires the first irrigation zone to be turned on.

In an effort to provide clarity, claim 18 has been amended to include the language "wherein the turning off the relay in response to the control data to disable the first irrigation zone so that the first irrigation zone is turned on for the first desired duration occurs at the beginning of the on-off duration so as to prevent irrigation in the first irrigation zone". In this respect, the Applicant attempts to more clearly word the previous recitation of claim 18.

The Examiner has rejected claims 1-16, and 21 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. These rejections indicated by the Examiner in these claims, most of which are antecedent related, have been corrected by various amendments to claims 1, 11, 18, and 21.

V. REJECTIONS UNDER 35 U.S.C. SECTION 102

Claims 1-21 are rejected under 35 U.S.C. Section 102(e) as being anticipated by U.S. Publications 2004/0090329, 2004/0090345, and 2004/0100394, all to Hitt. As previously discussed in this amendment, paragraph 0001 has been amended to claim priority to U.S. Provisional Patent Application 60/421,963, filed October 28, 2002, entitled System for Environmental Monitoring and Control in accord with Section 201.11 of the M.P.E.P.. Each of these cited publications claim priority from the same provisional application. In this respect, these cited publications were not invented "by another" as required by section 102(e).

Claims 1-3, 5, and 7-21 are rejected under 35 U.S.C. Section 102(b) as being anticipated by U.S. Patent No. 4,811,221 to Sturman (*the Sturman Patent*). For at least the reasons set forth below, it is submitted that these prior art rejections should be withdrawn and the pending claims allowed.

Claim 1 has been amended to further clarify the claim language as originally presented. The presently claimed invention as set forth in claim 1 is directed to a novel control system for an automatic sprinkler system including an irrigation controller having a first control line and a common line coupled to control a first valve. More specifically, the control system includes a relay coupled in series with the common line, a sensing circuit coupled to detect an assertion and deassertion of the first valve by the irrigation controller, and a controller coupled to receive a control data, the controller providing a control signal to enable the relay based on the control data wherein the relay is turned on or off based on the control data for controlling an on/off duration of the first valve.

The *Sturman Patent* cannot be properly relied upon as anticipating the invention as recited in claim 1. For example, *the Sturman Patent* fails to show both an automatic

sprinkler system having an irrigation controller and a control system. In fact, *Sturman* only shows a single irrigation controller from which a common line and at least a first control line are connected. In a further example, *Sturman* fails to show a sensing circuit of the controller that is coupled to detect an assertion and deassertion of the first valve by the irrigation controller, since *Sturman* only shows a single irrigation controller. Thus, for at least these reasons, the *Sturman Patent* fails to anticipate claim 1. It is also submitted that the *Sturman Patent* does not render the invention obvious. Hence, for at least the above reasons, it is submitted that the dependant claims are also novel and unobvious over the cited prior art.

Turning to claims 2-3, 5, and 7-10, these claims depend from claim 1 and thus for at least the above reasons are also novel and unobvious over the cited prior art. However, these claims further limit the claimed invention and thus are separately patentable over the cited prior art.

Claim 11 has been amended to clarify the claim language as originally presented. The presently claimed invention as set forth in claim 11 is directed to a novel control system for an automatic sprinkler system including an irrigation controller having a first control line and a common line coupled to control a first valve configured to irrigate an area. More specifically, the control system includes a sensing circuit coupled to detect an assertion and deassertion of the first valve by the irrigation controller, and a controller coupled to receive a control data, the controller providing a control signal to enable a relay based on the control data, wherein the relay is coupled in series with the common line of the automatic sprinkler system and is turned on or off based on the control data for controlling an the on/off duration of the first valve value.

The *Sturman Patent* cannot be properly relied upon as anticipating the invention as recited in claim 11. For example, *the Sturman Patent* fails to show both an automatic sprinkler system having an irrigation controller and a control system. In fact, *Sturman* only shows a single irrigation controller from which a common line and at least a first control line are connected. In a further example, *Sturman* fails to show a sensing circuit of the control system coupled to detect an assertion and deassertion of the first valve by

the irrigation controller since *Sturman* only shows a single irrigation controller. Thus, for at least these reasons, the *Sturman Patent* fails to anticipate claim 11. It is also submitted that the *Sturman Patent* does not render the invention obvious. Hence, for at least the above reasons, it is submitted that the dependant claims are also novel and unobvious over the cited prior art.

Turning to claims 12-16, these claims depend from claim 11 and thus for at least the above reasons are also novel and unobvious over the cited prior art. However, these claims further limit the claimed invention and thus are separately patentable over the cited prior art.

Claim 17 has been amended to clarify the claim language as originally presented. The presently claimed invention as set forth in claim 17 is directed to a novel method for controlling an automatic irrigation controller. Specifically, this method includes providing a secondary controller, coupling a relay of the secondary controller in series with a common line of the automatic irrigation controller, monitoring the common line with the secondary controller to determine an on-off duration of a first irrigation zone, receiving control data with the secondary controller used to determine a first desired duration of the first irrigation zone, turning on the relay to enable the first irrigation zone, and turning off the relay in response to the control data to disable the first irrigation zone so that the first irrigation zone is turned on for the first desired duration.

The *Sturman Patent* cannot be properly relied upon as anticipating the invention as recited in claim 17. For example, the *Sturman Patent* fails to show both an irrigation controller and a secondary controller. In fact, *Sturman* only shows a single irrigation controller from which a common line and at least a first control line are connected. In a further example, *Sturman* fails to show monitoring the common line with the secondary controller or any other steps involving the second controller, since only a single controller is disclosed in the patent. Thus, for at least these reasons, the *Sturman Patent* fails to anticipate claim 17. It is also submitted that the *Sturman Patent* does not

render the invention obvious. Hence, for at least the above reasons, it is submitted that the dependant claims are also novel and unobvious over the cited prior art.

Turning to claims 18-21, these claims depend from claim 17 and thus for at least the above reasons are also novel and unobvious over the cited prior art. However, these claims further limit the claimed invention and thus are separately patentable over the cited prior art. Note that claims 19-21 were amended to correct antecedent basis after amendments to claim 17.

VI. REJECTIONS UNDER 35 U.S.C. SECTION 103

Claims 4 and 6 are rejected under 35 U.S.C. Section 103(a) as being anticipated by U.S. Patent No. 4,811,221 to Sturman (*the Sturman Patent*) in view of U.S. Patent No. 4,112,670 to Morozumi. Claims 4 and 6 depend from claim 1 and therefore are also novel and unobvious over the cited prior art. Further, the previous discussion of *the Sturman Patent* is relevant and therefore for at least the reasons previously discussed relating to *the Sturman Patent*, these claims are also novel and unobvious over the cited prior art. However, these claims further limit the claimed invention and thus are separately patentable over the cited prior art.

CONCLUSION

In view of the foregoing, it is submitted that pending claims 1-21 are now in condition for allowance. Hence an indication of allowability is hereby requested.

If for any reason direct communication with Applicant would serve to advance prosecution of this case to finality, the Examiner is cordially urged to call the undersigned attorney at the below listed telephone number.

Respectfully submitted,

Dated: 6/22/05

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